## TABLE OF CONTENTS

<u>Section</u>			<u>Page</u>
1	INTRO	ODUCTION AND SUMMARY	. 1-1
	1.1	Background	. 1-1
	1.2	Analytical Approach	. 1-3
	1.3	Summary of Results	. 1-4
		and Facilities	
		Welfare	. 1-7
2	DEMAI	ND FOR OWR SERVICES	. 2-1
	2.1	Demand for Waste Services	. 2-1
		2.1.1 Types of OWR Services Affected by this Regulation	
		Services	. 2-3
	2.2	Trends in the Demand for OWR Services	
		Procedure (TCLP) Test	
		2.2.4 Evidence from the Toxics Release Inventory (TRI)	. 2-9
		OWR Services	2-10
	2.3	Demand for Management of Specific Types of Waste	2-11
	2.4	Characteristics of Demand as Reflected by the Market Model	2-14
3	SUPPI	LY OF OWR SERVICES	. 3-1
	3.1	Description of Suppliers	

# TABLE OF CONTENTS (continued)

<u>Section</u>		<u> </u>	age
	3.2	Types of OWR Services	3-3
	3.3	Commercial Status	3-4
	3.4	Quantities of Waste Managed by OWR Facilities	3-11
	3.5	Location of OWR Facilities	3-14
	3.6	3.6.1 Facility Throughput	3-14 3-14 3-18 3-19
	3.7	3.7.1 Data Sources	3-22 3-22 3-26 3-29
			3-32
4	DEVEI	LOPMENT OF THE OWR INDUSTRY BASELINE	4-1
	4.1	Baseline Facility Conditions	4-3 4-5
	4.2	Baseline Company Financial Conditions	1-12 1-15
5	THE (	OFF-SITE WASTE OPERATIONS STANDARD	5-1
	5.1	Controls for Emission Point Categories	5-2 5-2 5-2
	5.2	Regulatory Alternatives Selected for Analysis	5-3
	5.3	Costs of Regulatory Alternatives	5-5
	5.4	Compliance Costs of Each Regulatory Alternative, by Waste Type	5-10

5.5 Enhanced Monitoring Costs . . . . . . . . . . . 5-27

# TABLE OF CONTENTS (continued)

<u>Section</u>					<u>Page</u>
6	IMPAC	CTS OF T	HE REGULATORY ALTERNATIVES		. 6-1
	6.1	Market 6.1.1	Impacts		. 6-2
			Alternatives		. 6-3
		6.1.2	Scope of Market Analysis		. 6-3
		6.1.3	Baseline Quantities of OWR Services		
			6.1.3.1 Facility Supply		
			6.1.3.2 Market Supply		
			6.1.3.3 Implications of the Assumptions		. 6-8
	6.2	Complia	ance with the Standard		. 6-9
	6.3		ket Equilibrium Prices and ies		6-10 6-10
	6.4	Results	S		6-13
		0.1.1	Regulatory Alternatives		6-13
			Quantity		6-13
			Process Shut-Downs	•	6-30
		6.4.2	Employment Impacts		6-34
		6.4.3	Economic Welfare Impacts	•	6-35
	6.5	Company 6.5.1 6.5.2	Impacts		6-39 6-40 6-49
		0.3.2	6.5.2.1 Changes in the Cost of Capital		
			and Capital Structure		6-50
			6.5.2.2 Changes in Financial Status 6.5.2.3 Projected Financial Failure		6-62 6-70
	6.6	6.6.1 6.6.2	Regulatory Flexibility Analysis Potentially Affected Entities Distribution of Impacts Mitigating Measures		6-70 6-71 6-72 6-84
	מחכ				n 1

# TABLE OF CONTENTS (continued)

<u>Appendi</u>	<u>ces</u>	<u>Page</u>
A	List of SIC Codes Provided to Respondents to the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities	. A-1
В	Program Defining Waste Forms	. B-1
С	Elasticity of Demand for Off-site Waste and Recovery Operations	. C-1
D	Financial Analysis Method	. D-1
E	Estimating Companies' Weighted Average Cost of Capital	. E-1
F	Estimating Facilities' Baseline Waste Management Quantities	. F-1
G	Technique for Estimating Facilities' Average Variable Costs	. G-1
Н	Documentation and Summary of Methods Used to Impute Missing Financial Statement Values	. н-1

## LIST OF FIGURES

<u>Number</u>		<u>Page</u>
3-1 3-2	Size distribution of potentially affected companies . Share of commercial versus noncommercial waste	3-27
3-3	treatment services	3-30
3-3	all other activities	3-31
4-1	Treatment categories most commonly used to manage each waste form	. 4-4
4-2	Percentage of firms equal to or below the industry benchmark ratio: return on sales	4-16
4-3	Percentage of firms equal to or below the industry	
4-4	benchmark ratio: return on equity	4-18
	benchmark ratio: return on assets	4-20
6-1	Off-site waste flows to a sample OWR process, incineration	. 6-6
6-2	The effect of the emissions standard on the market	
	for OWR service i	6-11
6-3	Change in consumer surplus with regulation	6-36
6-4 6-5	Change in producer surplus with regulation	6-37
	actions	6-47
6-6 6-7	Marginal cost of capital schedule	6-53
6-8	type of financing	6-59
0-0	the industry lower quartile ratio: return on sales	6-67
6-9	Percentage of firm financial ratios equal to or below	<i>c c</i> =
6-10	the industry median quartile ratio: return on sales.	6-67
0-10	Percentage of firm financial ratios equal to or below the industry lower quartile ratio: return on equity.	6-68
6-11	Percentage of firm financial ratios equal to or below	0-00
	the industry median quartile ratio: return on equity.	6-68
6-12	Percentage of firm financial ratios equal to or below	
	the industry lower quartile ratio: return on assets.	6-69
6-13	Percentage of firm financial ratios equal to or below	c co
	the industry median quartile ratio: return on assets.	6-69

## LIST OF TABLES

<u>Number</u>		<u>Page</u>
2-1	1986 Waste Generation by SIC Code, by Treatment	
	Location	. 2-5
2-2	Waste Forms for Which OWR Services Are Demanded	
2-3	Treatment Processes at OWR Facilities	2-14
3-1	Waste Type Definitions	. 3-5
3-2	Number of Facilities Treating Waste, by Process and Commercial Status	. 3-9
3-3	Quantities of Waste Managed at OWR Facilities,	
	by Process and Commercial Status	3-12
3-4	Location of OWR Facilities, by State	3-15
3-5	Facility Size by Throughput	3-16
3-6	Employment at OWR Facilities	3-20
3-7	Facility Commercial OWR Revenues	3-21
3-8	Data Sources	3-24
3-9	Size Distribution of Potentially Affected Companies .	3-27
3-10	Average Size of OWR Facility by Company Size	3-28
3-11	Distribution of Firms by Number of OWR Facilities	
	Owned	3-29
3-12	Summary Statistics by Firm Size Category of Weighting	
	Factors Used to Calculate Firms' Baseline WACC	3-35
3-13	Summary Statistics by Firm Size Category of Firms'	
	Baseline WACC	3-36
4-1	Estimated Aggregate Quantities of Each Waste Form	
	Processed in Each Treatment Category by the 710	
	OWRs That Responded to the TDSR Survey	. 4-3
4-2	Model Processes Used to Estimate Costs	
4-3	Estimated Market Prices for Management of 60	
1 3	Waste Types Profiled	4-10
4-4	Baseline Financial Ratio: Return on Sales	4-15
4-5	Baseline Financial Ratio: Return on Equity	4-17
4-6	Baseline Financial Ratio: Return on Assets	4-19
4-7	Baseline Financial Ratio: Market-to-Book Ratio	4-19
4-7		4-21
4-8	Baseline Bankruptcy Prediction	4-24
5-1	Emission Point Control Options	. 5-4
5-2	OWR Standard Regulatory Alternatives Selected for	
	Economic Analysis	. 5-6
5-3	National Compliance Costs and Emissions by	
	Regulatory Alternative	. 5-7

# LIST OF TABLES (continued)

Number		<u>Page</u>
5-4	Compliance Costs, Regulatory Alternative 1 by	
	Waste Management Process	5-11
5-5	Compliance Costs, Regulatory Alternative 2 by	
	Waste Management Process	5-14
5-6	Compliance Costs, Regulatory Alternative 3 by	
	Waste Management Process	5-17
5-7	Compliance Costs, Regulatory Alternative 4 by	
	Waste Management Process	5-20
5-8	Compliance Costs, Regulatory Alternative 5 by	
0 0	Waste Management Process	5-23
	110000 1101100 1100000 1 1 1 1 1 1 1 1	0 20
6-1	Variables Used in the OWR Model	. 6-4
6-2	Price and Quantity at Baseline and Under	. • •
0 2	Regulatory Alternative 1, by OWR Process	6-14
6-3	Price and Quantity at Baseline and Under	0 14
0-3	Regulatory Alternative 2, by OWR Process	6-17
6-4		0-17
6-4	Price and Quantity at Baseline and Under	6-20
<i>c</i>	Regulatory Alternative 3, by OWR Process	6-20
6-5	Price and Quantity at Baseline and Under	6 00
	Regulatory Alternative 4, by OWR Process	6-23
6-6	Prices and Quantities of OWR Services	
	at Baseline and Under Regulatory Alternative 5	6-26
6-7	Closures Under Each Regulatory Alternative	6-31
6-8	Changes in Employment Under the Regulatory	
	Alternatives (for 551 Commercial Facilities)	6-35
6-9	Changes in Economic Welfare with the Regulatory	
	Alternatives	6-40
6-10	Projected Change in Revenue	6-43
6-11	Projected Change in Operating Costs	6-44
6-12	Projected Capital Compliance Costs	6-45
6-13	Projected Change in Firm Value	6-52
6-14	Number of Firms with Compliance Capital Costs (CC)	
	Above the Retained Earnings Breakpoint (B)	6-55
6-15	Estimated With-Regulation WACC	6-60
6-16	Estimated Change in the Cost of Capital	6-61
6-17	Baseline and With-Regulation Financial Ratio:	
	Return on Sales	6-64
6-18	Baseline and With-Regulation Financial Ratio:	
	Return on Equity	6-65
6-19	Baseline and With-Regulation Financial Ratio:	
	Return on Assets	6-66
6-20	Annual Compliance Costs as a Percentage of	
	Baseline Waste Treatment Costs	6-75
6-21	Annual Compliance Costs as a Percentage of	0 , 0
·	Baseline Production Costs	6-77
6-22	Annual Compliance Costs as a Percentage of Sales:	5 , ,
V 22	Excluding Firms with Zero Compliance Costs	6-80
6-23	Annual Compliance Costs as a Percentage of Sales:	5 50
0 43	Including Firms with Zero Compliance Costs	6-82
	TITOTAGETING TETRING WELLIT ACTO COMPATABLE CODED	0 0 2